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# Freedoms and Economic Growth: Transitional and Permanent Components

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**Abstract**
This paper investigates the empirical foundation for policy reform prescriptions suggested by the institutional approach to economic growth. The focus is the relationship between institutional reforms, measured by changes in a country's political or civil rights, and economic growth. Empirical models previously estimated using cross-section data are extended by adding a temporal element. This allows an estimation of the timing of benefits following a reform. In addition to finding support for the idea that institutional reforms can cause increases in economic growth, five major implications emerge: (i) the economic benefits of freedom reforms are systematic and significant, (ii) economic benefits, in the form of increased growth, occur with a lag after the initiation of a reform in political rights or in civil liberties, (iii) reforms in civil liberties eventually require a reform in political rights in order to be sustained, (iv) changes in the capital-to-labor ratio have a larger effect on economic growth in the short run than in the long run, and (v) there remains significant and unexplained regional variation in the short-run effects of changes in the capital-to-labor ratio.

# Freedoms and Economic Growth: Transitional and Permanent Components

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## ABSTRACT

This paper investigates the empirical foundation for policy reform prescriptions suggested by the institutional approach to economic growth. The focus is the relationship between institutional reforms, measured by changes in a country's political or civil rights, and economic growth. Empirical models previously estimated using cross-section data are extended by adding a temporal element. This allows an estimation of the timing of benefits following a reform. In addition to finding support for the idea that institutional reforms can cause increases in economic growth, five major implications emerge: (i) the economic benefits of freedom reforms are systematic and significant, (ii) economic benefits, in the form of increased growth, occur with a lag after the initiation of a reform in political rights or in civil liberties, (iii) reforms in civil liberties eventually require a reform in political rights in order to be sustained, (iv) changes in the capital-to-labor ratio have a larger effect on economic growth in the short run than in the long run, and (v) there remains significant and unexplained regional variation in the short-run effects of changes in the capital-to-labor ratio.

# FREEDOMS AND ECONOMIC GROWTH: TRANSITIONAL AND PERMANENT COMPONENTS

Sure-fire recipes for accelerated and sustained national economic growth and development remain a mystery; even though donor agencies and foundations have committed hundreds of billions of dollars to technical assistance and development and growth, economists have for decades researched and studied the topic (Lucas 1988). In fact, the recent evidence for the lower income economies that have benefitted from donor support is discouraging (World Bank 1991, USAID 1989). During the decade of the 1980s the lower income nations made little progress in improving their economic status. Moreover, there is no widely accepted empirical basis for distinguishing between those nations that did grow and develop and those that did not. In short, despite an abundance of anecdotal evidence and arm-chair theorizing, the policy disciplines have not solved the puzzle of sustained economic growth.

Available theories on economic growth and development have generated a number of hypotheses on potential determinants. In the contemporary literature, for example, different theories have for periods captured the imagination of the policy disciplines, and the policy professionals responsible for programming development assistance. Institutions (Commons 1934), technological change (Solow 1957), human capital (Schultz 1964), infrastructure (Mellor 1976), economic policy (Balassa 1971; Johnson 1973) and increasing external returns to knowledge (Lucas 1988) are examples. More recently, the research on economic growth and development has focused on institutions and contracts, returning to the themes of Commons and his contemporaries (De Soto 1989; Olson 1982; North 1990; Clague and Rausser 1991; Williamson 1991).

These modern approaches have presented a widened lens linking political rights, civil rights and economic rights with results on the organization and functioning of competing interest groups and the

fuller understanding of the roles of incentives, incentive compatibility, contracts and credibility (Clague and Rausser 1991). The new democracy initiative of USAID and the attention given to processes of policy reform by the donor organizations exemplify the implicit support for the modern institutional approach to programming for economic growth and development.

The empirical results in this paper respond to the challenge of the new institutional approach to economic growth and development policy. The analysis utilizes an aggregate production function consistent with both neoclassical and sustainable growth theories and incorporates a set of indices on political and civil rights with national income account aggregates measuring economic performance for 125 countries during the period 1972-1988. Exploratory work using these liberty indices along with variables describing economic performance has already been conducted (Scully 1988, Grier and Tullock 1989, Barro 1991). In contrast to earlier work, our analysis allows an assessment of the causal relationships between political and civil freedoms and the dynamics of economic growth. Moreover, our framework admits a measurement of the size and timing of the benefits realized from reforms of institutional rights.

## Institutions and Economic Growth

The modern theory for linking institutions, broadly conceived as both the rules of the game and organizations, to economic growth and development is just emerging (Buchanan 1989; North 1991; Olson 1991; Ruttan 1991; Rausser 1982, 1990). At the heart of the new theory of institutional economics is the idea that the setting in which policies are made or formulated or the "rules by which rules are made," or the "policy culture" are a critical determinant of sustained economic growth and development. This theory goes beyond the idea of rent seeking (Krueger 1974) to identify both productive and predatory roles for interest groups and government (Rausser 1982). In concept, the constitutional setting, the legal and regulatory framework, the authority and history of the bureaucracy

(Allison 1971), and the political, civil, and economic rights implied by this complex set of factors govern the possibilities for sustained national economic growth and development.

Research to expand the analytical basis for applying the ideas from this new institutional approach has taken a number of directions. Game theory models have been used to study the strategies of interest groups or agents in competing situations (Rausser and Zusman 1992). Economic functions have been dissected to understand the impacts of ownership and control on the behavior of economic agents, and the principal agent problem. Complexities of the operations of large and multi-function economic units have been evaluated for impacts on behavior (Williamson 1985). And, the incentives in differing types of contracts and contracting arrangements have been analyzed (Tirole and Laffont 1990). A major contribution of these results to date has been to seriously question existing theories of economic growth. The more conventional theories have in large measure taken as "given" the very aspects of the national political and economic systems that are the focus of the analysis on institutional-constitutional economics (Buchanan 1989).

Formal economic growth models have been extended to improve explanations of sustained economic growth (Lucas 1988, Romer 1986). Traditional models of economic growth emphasizing capital accumulation predict growth until a zero growth rate steady state is reached, a prediction in contrast to the experience of sustained growth in developed economies. Rather than rely on exogenous technological change as an "explanation" of sustained growth, these more recent approaches search for specifications that generate sustained nonzero equilibrium growth rates. By specifying a production technology with increasing external returns to human capital these models can explain, without the aid of external shocks, economies with sustained economic growth. In addition to a technology of goods production, the technology of institutions can be defined to transfer wealth between sectors, and supply public goods that sustain productivity growth (Murphy, Shleifer and

Vishny 1991). In short, change in institutional technologies can potentially be an important explanation of an economic growth.

## Empirical Approach

In many recent empirical growth models, average rates of economic growth conditioned by production function arguments have been related to indices of political and civil rights recorded at particular points in time (Scully 1988; Barro 1991; Grier and Tullock 1989). These studies have produced promising results, showing an association between higher growth and enhanced political and civil rights. However, these findings are also consistent with an alternative hypothesis: that richer countries can afford more liberal political and civil rights systems. Clearly, differentiation between these two causal hypotheses has far-reaching implications for development assistance and national strategies for economic growth. If the direction of causality is from economic growth to institutions, programs that attempt to produce growth through changed policies and institutions are flawed. However, if economic growth is produced by changes in political, civil and economic institutions, then initiatives addressing these fundamental features of societal organization can be successful.

Previous empirical work measuring economic growth models has utilized only cross-section data, an approach that has become standard in this area of empirical research. Scully uses 95 countries and averages GDP growth rates over 25 years and Freedom House institutional measures over 15 years. Barro uses 98 countries and averages country data on growth and on revolutions and assassinations over 26 years. DeLong and Summers use 25 countries and average their economic data over 26 years, and match these averages with policy and institutional measures from the World Competitiveness Report in 1983, from the World Bank Development Report in 1983 and 1987, and with information on import barriers measured by Barbine in 1988. Murphy, Shleifer, and Vishny (1991) augment Barro's data set (data averaged over the period 1960-1985) with college enrollment

ratios measured in 1970. The empirical results from these and other studies of cross-section economic performance are reviewed in Levine and Renalt (1992). While these authors conclude that the most important determinant of economic growth is investment, an alternative methodology provides justification for including measures of institutional rights.[1]

Presumably there are two justifications for the cross-section studies. The first is that economic growth is a long-run phenomenon, and is best measured through averages over long time periods, and that annual data are contaminated with short-run "noise." A corollary is that there are no interesting or measurable short-run relationships among institutions, policies, and economic performance. A second justification is that political, institutional, and policy measures have little temporal variation within countries, and that measurements across countries capture the main sources of variation.

Unfortunately, the existing cross-section approach can neither be used to measure causality nor the timing of responses to reforms in institutions. An alternative to identifying long-run features through averaging the data over long time periods is to utilize time-series econometric methods to decompose annual data into their "permanent" and "transitory" components. This approach has the advantage of utilizing temporal variations in these data to provide evidence on causality and timing issues.

In measuring an empirical relationship between two variables:

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[1]Levine and Renalt examine the fragility of empirical relationships found in cross-country growth regressions. Using an extreme-bounds analysis suggested by Leamer (1983), Levine and Renalt conclude that:

> Although there are many econometric specifications in which macroeconomic indicators—taken individually or in groups—are significantly correlated with growth, the cross-country statistical relationship between long-run average growth rates and almost every particular macroeconomic indicator is fragile. National policies appear to be a complex package, and future researchers may wish to focus on macroeconomic policy regimes and interactions among policies as opposed to the independent influence of any particular policy.

Levin and Renalt find one robust correlation, between GDP growth and investment, and suggests that the relationship between institutional freedoms and economic growth is fragile. However, McMillan (1993) finds that the relationship between institutional freedoms and economic growth is robust if an alternative method for dealing with multicollinearity, principal components, is used instead of the extreme bounds approach.

$$y_t = \beta\, x_t\,, \tag{1}$$

a researcher must first determine the time period for which the equation is valid. The belief that economic growth is a long-run phenomenon suggests measuring t for equation (1) in periods of decades or longer. An alternative approach is to decompose annual observations of y into two components, permanent ($y_t^*$) and transitory ($y_t^+$):

$$y_t = y_t^* + y_t^+. \tag{2}$$

If equation (1) identifies a long-run relationship, then estimation of (1) using $y_t^*$ as a dependent variable will correctly identify the parameters of (1). Additionally, there may be short-run relationships between these variables that can be identified by using $y_t^+$ as a dependent variable. The decomposition of time series is frequently made using ARMA models, where predicted values of the ARMA model yield the permanent component ($y_t^*$) and the actual minus the predicted, or the estimated error, yields the transitory component ($y_t^+$).

## Model Specification

The motivation for the empirical model, common to standard studies of economic growth, begins with an aggregate production function relating aggregate output to the inputs of capital, labor, and shifters of the production function. This yields a relationship between the growth rate of aggregate output (y), the growth rate of the capital-to-labor ratio (k) and changes in shifters of the production function (s):

$$y_t = \beta\, k_t + \theta\, s_t \tag{3}$$

where $\beta$ and $\theta$ are the products of the marginal productivity of capital and production function shifters and the capital intensity of the economy.

As described in the previous section, a time-series ARMA model is used to decompose per capita GDP growth rates into their permanent and transitory components. This model is estimated with the restriction that the same process determines evolution of the GDP series in all countries. The method differs from previous time-series modeling of GDP series that allow ARMA parameters to vary by country (Bannerjee, Lumsdaine, and Stock 1992). This approach is used to avoid the rhetorical allocation of effects of institutions to differences in estimated parameter differences across countries. Thus, our approach is a two-step procedure where the first step is the decomposition of the growth series, and the second step is an empirical model that uses the components from the first step as dependent variables and economic and quantified institutional features as explanatory variables.

Note that a cross-section model of the long-run relationship may be obtained as a special case of the pooled model if per capita GDP is generated following a stationary process, and there is no temporal variation in the independent variables. Since Bannerjee, Lumsdaine, and Stock find nonstationarities in the GDP series for some countries, and since the annual data indicate that there are significant variations in institutional measurements, the pooled model should yield preferred estimates of the parameters of equation (1).

## Data

The data for the empirical analysis are Freedom House indices of political and civil rights (Gastil 1987) and the Penn World Table database on national income accounts (Heston and Summers 1992). The sample covers 1972, the earliest year for which Freedom House indices are available, to 1988, the last year for which economic data are available in version IV of Heston and Summers Penn World Tables. Annual national capital stocks are estimated from the Penn World Table data.

The dependent variables in equation (1) are alternatively the permanent and transitory components of annual per capita GDP growth rates, derived from fitting an ARMA model to the GDP

growth series. These independent variables are grouped by class. The first class, economic and demographic variables, include:

| | |
|---|---|
| GDP | Per capita gross domestic product, parity purchasing power corrected in 1980 U.S. dollars |
| GROWKL | The difference in the logarithms of the capital-to-labor ratio between the current and previous years |
| POPCHG | The difference in the logarithms of population between the current and previous years |
| RGDPTT | The level of real gross domestic product (with terms of trade adjustment) |

The second group of variables measures levels of the institutional features. These ratings are constructed by the Freedom House through a simple averaging of ratings for different features of a nation's political rights or civil rights (seven features for political rights and 13 features for civil rights). The political rights rating measures the degree of representativeness or democratization of a particular government. The civil rights rating measures whether basic liberties are protected. Each item or point in the list is given a score of 0, 1 or 2 based on a set of procedures that is standard across countries and years. These raw scores are then averaged and represented by a 7-point scale, with 1 being the most free or with the most rights and 7 being the least free or with the most restrictions on rights.

For political rights, most western European democracies are 1s while nations ruled by despots that feel little constraint from public or popular tradition are 7s. Civil rights are 1s for nations in which publication and expression are not closed, especially if the intent is to influence legitimate political processes. The scale level of 7 is for nations where there is pervasive fear, little independent expression, and a police-state environment.

The qualitative variables measuring institutional features are:

| | |
|---|---|
| P1OR2 | Takes the value 1, if the political rights have a scale value of 1 or 2, 0 otherwise |
| P3T05 | Takes the value 1, if the political rights have a scale value of 3 to 5, 0 otherwise |
| C1OR2 | Takes the value 1, if the civil rights have a scale value of 1 or 2, 0 otherwise |
| C3TO5 | Takes a value of 1, if the civil rights have a scale value of 3 to 5, 0 otherwise |

Thus, the Freedom House indices were compressed into three instead of seven scale values. Also, to avoid singularity by construction, the qualitative variables representing the scaled values of 6 and 7 were omitted.

Table 1 summarizes annual means and standard deviations of economic and institutional variables for 125 countries. The institutional measures are annual ratings of political and civil rights produced by the Freedom House (see later discussion for more detail). Table 1 suggests that there is significant temporal variation in these institutional variables within a given country. The standard deviation of political rights measured across countries is 2.035. The average standard deviation of political rights within countries is .64. There are 18 countries with standard deviations greater than 1.3 (twice the standard deviation within countries) of their political rights measure. The average standard deviation of civil rights measures measured across countries is 1.831. The average standard deviation of civil rights within countries is .56. There are 14 countries with standard deviations greater than 1.1 of their civil rights measure. The empirical approach of this research utilizes these additional sources of variation in identifying relationships between institutional measures of freedoms and economic performance.

The last group of variables is again qualitative and designed to permit impact estimation of the timing and magnitude of the institutional changes for each of the countries:

| | |
|---|---|
| RPD1 | Takes the value 1 if the nation has had a political right scale value less than the historically highest for one year, 0 otherwise |
| RPD2-RPD5 | Similarly defined variables with the number of years political rights had a scale value less than the historically highest indicated by the identifiers 2 through 5 |
| RCD1-RCD5 | Defined using the same procedures as for political rights, but for civil rights |

These qualitative variables are illustrated for the example of Bangladesh in Table 2. In 1972, Bangladesh had a political rights rating of 4. This rating rose to 5 in 1975 and fell to 4 in 1976. The year 1976 is then defined as the beginning of a reform, and the qualitative variable RPD1 takes a value of one for this year. In 1977, this reform is sustained, so the variable RPD2 takes a value of

one for this year. Similarly, RPD3, RPD4, and RPD5 take values of one in 1978, 1979, and 1980. In civil rights, there are two Bangladesh reforms, one initiated in 1977 and one initiated in 1984. Each of these reforms is sustained for five years, with the variables RCD1, RCD2, RCD3, RCD4, and RCD5 taking values of one in years following the initiation of a reform in a manner similar to political rights. These qualitative variables allow the estimation of an empirical model that addresses the issue of causality of political and civil rights reforms on economic growth and measures the magnitude and timing of the effects.

## Estimation

In regressions that combine cross-section and time-series data, the set of right-hand side variables need not explain all of the systematic variation in the left-hand side variable. A general expression of the error term when empirically estimating equation (1) is:

$$\varepsilon_{it} = m_i + s_t + \mu_{it} \tag{4}$$

where $m_i$ is the systematic component associated with the $i^{th}$ geographic unit, $s_t$ is the systematic component associated with the $t^{th}$ time period, and $\mu_{it}$ is a random error. Two strategies have been proposed to exploit this additional source of systematic variation: a "fixed effects" estimator that involves a dummy variable transformation of $m_i$ and $s_t$ and a "random effects" estimator that involves the estimation of (1) by application of Generalized Least Squares. As Mundlak (1978) has shown, a decision between the fixed effect approach and the random effect approach is unnecessary, since the effects are in fact random and the fixed effect estimator can result in inferences conditional on the sample used in the estimation. Of course for this interpretation of the fixed effects estimator, the applicability of parameter estimates to populations outside the sample depends on whether the sample used in estimation is random and representative.

Qualitative variable construction can transform the $m_t$ and $s_t$ into observed elements whose effects may be directly estimated. The estimated version of equation (1), after substituting the fixed effect transformation of equation (3) into equation (1) is:

$$y_{it} = \beta X_{it} + \rho F_{it} + \delta D_{it} + \gamma Z_{it} + \mu_{it} \quad (5)$$

where $X_{it}$ is a vector of production function inputs, $F_{it}$ is a vector of qualitative variables measuring freedoms, $D_{it}$ is a vector of qualitative variables measuring durations of reforms in freedoms, and $Z_{it}$ is a vector of regional qualitative variables. Regional variables are defined with the Middle East countries omitted to prevent singularity. The country groups for the geographic effect (with numbers of countries in parentheses) are:

| | |
|---|---|
| AMER | North and South American continent countries (29) |
| ASIA | Asian countries (18) |
| AFRI | African (44) |
| EURO | Europe (23) |

There were 11 Middle Eastern countries in the sample.

## Results

Table 2 shows the results of fitting low-order ARMA models to the per capita GDP growth rate data. Five ARMA models fit are: AR(1), AR(1) MA(1), AR(2), AR(2) MA(1), AR(2) MA(2). Three criteria to select among the five models estimated are the Aikike Information Criteria, the chi-square statistic testing the residuals for white noise, and the t-ratios measuring the significance of the estimated coefficients. The chi-square statistics quite clearly reject the hypothesis that the raw series of GDP growth rates represents white noise.

The top row of Table 2 tests the annual growth rates for white noise. Since the chi-square test statistic rejects the hypothesis of white noise, some type of ARMA modeling can improve prediction of future GDP growth rates. The chi-square test of residuals from the AR(1) model does not reject

the hypothesis of white noise, so this model is not used. The estimated coefficients of an AR(2) MA(2) model are not individually significant, so this model is also disqualified. Adding an MA term to the AR(2) model reduces the statistical significance of the AR(2) term and the MA(1) term. This leaves us with two models for decomposing the per capita GDP growth series: AR(1) MA(1), and AR(2). Second-stage estimations are completed using each of these decompositions. Since the second-stage results using either of these series are similar, only results using the AR(1) MA(1) decomposition are reported.

Table 3 shows the results of the pooled regressions where the dependent variables are the permanent and transitory decompositions of per capita GDP growth rates. The effect of capital accumulation on GDP growth is larger in the transitory phase than in the long run, as is seen from the estimates of .45 for the variable CKL when the dependent variable is the transitory component, compared with the estimate of .16 for the variable CKL when the dependent variable is the permanent component. Neither the level of GDP nor the rate of population growth is significantly related to economic growth. Dummy variables indicate that permanent rates of growth are slightly higher in Asia than in Europe, Africa and the Americas, and larger than the excluded group, the Middle Eastern countries.

Civil rights contribute about a one-third of a percentage point to the permanent component of annual GDP growth. The dummy variables for civil rights reforms suggest that reforms in civil rights, after a lag of two years, lead to higher per capita GDP growth rates.

Estimated coefficients from the transitory component regression suggest why the benefits of reforms changing rights might be difficult to implement. Since many of the political reform transitional coefficients (RPD1—RPD5) are negative, and larger in magnitude than the coefficients in the permanent component regression, the benefits to a reform are shown to be slow to accrue. Since

the level effects of institutions were not significant, the regression was also estimated excluding these variables. This respecification did not materially change the results.

The differing transitory and permanent effects of reforms are illustrated in Figure 1, which plots the permanent and transitory effects on economic growth of reforms in civil rights and political rights for each of five years following the initiation of a reform. The net effect in a single year is the sum of the permanent and transitory components. In the case of political rights, this net effect is negative, and large, for the first three years following a reform.

One of the significant differences between the permanent component and transitory component regressions is the differing effect of changes in the capital-to-labor ratio on economic growth. These results are comparable to the calculated estimates of DeLong and Summers (1991). These authors refer to research by Jorgenson (1988) which postulates that the depreciation of equipment will cause a stronger short-run than long-run relationship between investment and growth. DeLong and Summers calculate that an increase in equipment investment of one percentage point will result in an increase in the percapita GDP growth rate of .39 percentage points after one year, and an increase in the percapita GDP growth rate of .17 percentage points after 25 years.

These results suggest that civil rights reforms have a positive effect on the permanent component of economic growth, while political rights reforms have a negative effect on the transitory component of economic growth. In order to understand the total effect of reforms on growth, it is necessary to understand the interactions between these two types of reforms in rights. Table 4 breaks down the interrelationships between reforms in civil rights and political rights. For the 2125 country years in the sample, 1440 did not experience a reform in basic liberties. Of the 121 reforms initiated in civil rights, 73 were not accompanied by a contemporaneous reform in political rights. Similarly, of the 118 reforms initiated in political rights, 61 were not accompanied by a contemporaneous reform in civil rights.

Table 4 suggests a different relationship between successful reforms in civil rights and successful reforms in political rights. Of 64 reforms initiated in political rights without a reform in civil rights, 49 of the sustained reforms were not accompanied by a reform in civil rights after five years. This contrasts with 32 successfully sustained civil rights reforms out of 73 initiated without an accompanying reform in political rights. Thus, the typical civil rights reform required an accompanying reform in political rights in order to be sustained, and these political rights reforms were likely to produce short-run declines in GDP growth.

A final analysis is to assess the regional differences in responses to reforms. Tables 5 and 6 report regression results for equation (1) estimated for each geographic region using alternatively the permanent component of GDP growth as the dependent variable (Table 5), and the transitory component of GDP growth as the dependent variable (Table 6).

The results of Table 5 suggest that the permanent effect of freer political institutions is negative in Asia and positive in Europe. The results of Table 6 suggest that the largest source of regional variations in growth rates comes through different effects of changes of the capital-to-labor ratio on economic growth. These rates range from a high of .79 for North and South America to a low of .26 for European countries and .31 for Asian countries. A model was estimated to allow the slope of the change in the capital-to-labor ratio variable to vary with institutional levels. This specification was not supported by the data.

It may be easier to appreciate the magnitude of these results if they are stated in comparison to changes in the capital-to-labor ratio. A reform in civil rights that raises a country from the least free rating to the most free rating in civil rights is likely to add about .4 percent to that country's permanent growth rate. Using the estimate of CKL of .158 obtained from Table 3, a similar rise in the capital-to-labor ratio of 2.4 percent will produce the same change in growth rates. For the sample

mean of a capital-to-labor ratio of 11,708 in 1980 U.S. dollars and a population of 33 million, this is equivalent to an annual additional investment of $9.3 billion in this nation's economy.

## Conclusions

These empirical results have five broad implications for policy reform and economic growth:

- The economic benefits of a reform in rights are systematic and significant
- Economic benefits, in the form of increased growth, occur with a lag after the initiation of reforms in political rights or in civil rights;
- Reforms in civil rights require a reform in political rights in order to be sustained, while the converse is not true;
- Changes in the capital-to-labor ratio have a larger effect on economic growth in the short run than in the long run; and
- There remains a significant and unexplained regional variation in the short run effects of changes in the capital-to-labor ratio.

The analysis of the cross-country and intertemporal data linking political and civil rights has produced results that support the broad-scale policy interventions often advocated for improving economic growth in developing nations. The model, though largely descriptive, parallels standard aggregate production specifications in neoclassical growth theory. Institutional variables for political freedom and civil rights are introduced to obtain estimates of the effects of both level and changes in institutions. The latter effect provides the principal basis for the conclusion that the institutional, constitutional, and policy changes leading to improved political and civil rights contribute systematically to higher and sustained economic growth. The remaining puzzle, aside from refinements in the estimates related to improved structure and data, is how to make and sustain the institutional, constitutional, and policy changes that result in improved political and civil rights.

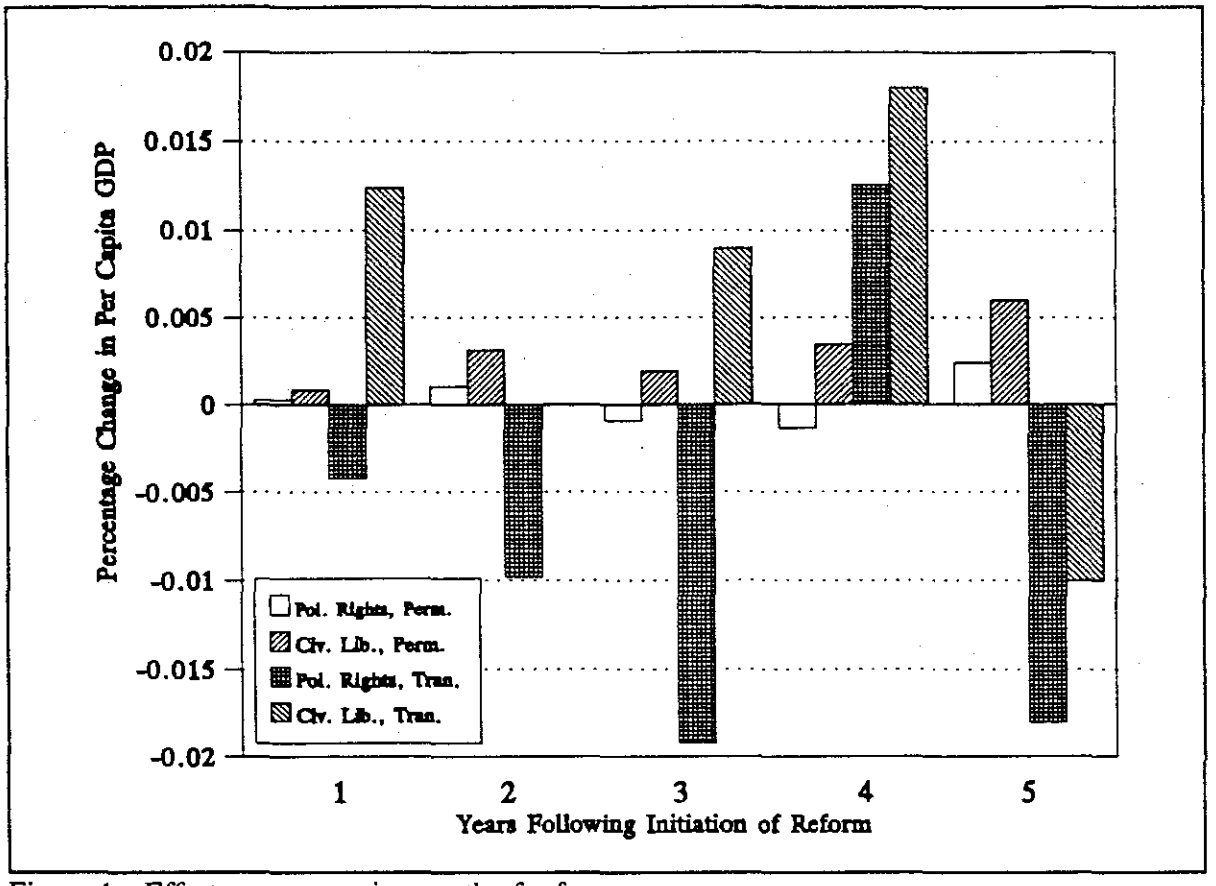


Figure 1. Effects on economic growth of reforms

Table 1. Country annual means and standard deviations for selected variables, 1972 to 1988

| | GDP Growth Mean | GDP Growth Std Dev | KL Growth Mean | KL Growth Std Dev | Pol Rights Mean | Pol Rights Std Dev | Civil Lib Mean | Civl Lib Std Dev |
|---|---|---|---|---|---|---|---|---|
| Afghanistan | -0.0021 | 0.055 | 0.0001 | 0.016 | 6.8 | 0.75 | 6.5 | 0.62 |
| Algeria | 0.0315 | 0.101 | 0.0538 | 0.031 | 6.0 | 0.35 | 6.0 | 0.00 |
| Angola | -0.0574 | 0.146 | -0.0192 | 0.019 | 6.8 | 0.40 | 6.6 | 0.81 |
| Argentina | -0.0086 | 0.047 | 0.0063 | 0.023 | 3.7 | 1.99 | 3.3 | 1.69 |
| Australia | 0.0122 | 0.024 | -0.0125 | 0.005 | 1.0 | 0.00 | 1.0 | 0.00 |
| Austria | 0.0217 | 0.020 | 0.0398 | 0.010 | 1.0 | 0.00 | 1.0 | 0.00 |
| Bahamas | 0.0542 | 0.072 | 0.0262 | 0.023 | 1.5 | 0.51 | 2.1 | 0.33 |
| Bahrain | 0.0433 | 0.122 | 0.0051 | 0.020 | 5.4 | 0.61 | 4.6 | 0.51 |
| Bangladesh | 0.0209 | 0.028 | -0.0101 | 0.027 | 4.5 | 1.46 | 4.4 | 0.70 |
| Barbados | 0.0142 | 0.043 | 0.0243 | 0.010 | 1.0 | 0.00 | 1.2 | 0.39 |
| Belgium | 0.0135 | 0.031 | 0.0239 | 0.014 | 1.0 | 0.00 | 1.0 | 0.00 |
| Benin | -0.0110 | 0.057 | 0.0148 | 0.036 | 7.0 | 0.00 | 6.5 | 0.72 |
| Bolivia | -0.0190 | 0.049 | -0.0012 | 0.036 | 4.1 | 2.03 | 3.7 | 0.85 |
| Botswana | 0.0410 | 0.091 | 0.0797 | 0.071 | 2.1 | 0.24 | 3.1 | 0.24 |
| Brazil | 0.0178 | 0.052 | 0.0327 | 0.029 | 3.5 | 0.94 | 3.5 | 1.18 |
| Burkina Faso | 0.0216 | 0.048 | 0.0158 | 0.017 | 5.4 | 1.80 | 4.8 | 1.03 |
| Burma | 0.0322 | 0.020 | 0.0276 | 0.024 | 6.9 | 0.33 | 6.2 | 0.73 |
| Burundi | 0.0121 | 0.057 | 0.0515 | 0.038 | 6.9 | 0.24 | 6.2 | 0.44 |
| Cameroon | 0.0208 | 0.069 | 0.0362 | 0.028 | 6.1 | 0.24 | 5.5 | 1.07 |
| Canada | 0.0250 | 0.034 | 0.0265 | 0.008 | 1.0 | 0.00 | 1.0 | 0.00 |
| Cape Verde | 0.0574 | 0.069 | 0.0059 | 0.019 | 5.7 | 0.48 | 6.1 | 0.57 |
| Cent. Afr. Rep. | -0.0126 | 0.062 | -0.0234 | 0.017 | 6.9 | 0.33 | 6.3 | 0.69 |
| Chad | -0.0217 | 0.109 | -0.0310 | 0.030 | 6.6 | 0.51 | 6.5 | 0.51 |
| Chile | -0.0012 | 0.093 | -0.0052 | 0.022 | 5.9 | 1.39 | 4.8 | 0.75 |
| China | 0.0571 | 0.046 | 0.0480 | 0.027 | 6.3 | 0.47 | 6.2 | 0.56 |
| Colombia | 0.0166 | 0.024 | 0.0126 | 0.007 | 2.0 | 0.00 | 2.8 | 0.39 |
| Congo | 0.0217 | 0.152 | 0.0146 | 0.038 | 6.5 | 0.87 | 6.2 | 0.39 |
| Costa Rica | 0.0091 | 0.056 | 0.0235 | 0.023 | 1.0 | 0.00 | 1.0 | 0.00 |
| Cyprus | 0.0282 | 0.106 | 0.0235 | 0.016 | 2.1 | 1.14 | 2.9 | 0.93 |
| Denmark | 0.0087 | 0.035 | 0.0148 | 0.015 | 1.0 | 0.00 | 1.0 | 0.00 |
| Dominican Rep. | 0.0010 | 0.043 | 0.0468 | 0.027 | 2.2 | 1.24 | 2.6 | 0.51 |
| Eduador | 0.0170 | 0.065 | 0.0261 | 0.029 | 3.8 | 2.30 | 3.2 | 1.25 |
| Egypt | 0.0427 | 0.083 | 0.0481 | 0.028 | 5.1 | 0.66 | 4.6 | 0.80 |
| El Salvador | -0.0091 | 0.072 | 0.0057 | 0.027 | 3.2 | 1.24 | 3.7 | 0.77 |
| Ethiopia | 0.0012 | 0.024 | -0.0068 | 0.013 | 6.5 | 0.94 | 6.6 | 0.61 |
| Fiji | -0.0013 | 0.061 | -0.0101 | 0.019 | 2.4 | 1.18 | 2.3 | 0.85 |
| Finland | 0.0252 | 0.029 | 0.0268 | 0.012 | 1.9 | 0.33 | 1.9 | 0.33 |
| France | 0.0137 | 0.019 | 0.0285 | 0.014 | 1.0 | 0.00 | 1.9 | 0.33 |
| Gabon | 0.0238 | 0.235 | 0.0543 | 0.101 | 6.0 | 0.00 | 6.0 | 0.00 |
| Gambia | 0.0285 | 0.201 | 0.1064 | 0.080 | 2.5 | 0.51 | 2.8 | 0.95 |
| Ghana | -0.0157 | 0.067 | -0.0377 | 0.014 | 5.9 | 1.68 | 5.1 | 1.05 |
| Greece | 0.0124 | 0.029 | 0.0338 | 0.028 | 2.4 | 1.62 | 2.4 | 1.18 |
| Guatemala | -0.0025 | 0.036 | 0.0035 | 0.025 | 3.8 | 1.19 | 4.0 | 1.32 |

Table 1. Continued

| | GDP Growth Mean | GDP Growth Std Dev | KL Growth Mean | KL Growth Std Dev | Pol Rights Mean | Pol Rights Std Dev | Civil Lib Mean | Civl Lib Std Dev |
|---|---|---|---|---|---|---|---|---|
| Guinea | 0.0145 | 0.039 | -0.0031 | 0.006 | 7.0 | 0.00 | 6.4 | 0.87 |
| Guinea-Bissau | -0.0174 | 0.096 | -0.0293 | 0.021 | 6.1 | 0.34 | 6.2 | 0.40 |
| Buyana | -0.0183 | 0.116 | -0.0037 | 0.024 | 4.2 | 0.90 | 3.9 | 1.11 |
| Haiti | 0.0021 | 0.047 | 0.0396 | 0.026 | 6.5 | 0.62 | 5.7 | 0.59 |
| Honduras | 0.0068 | 0.058 | 0.0009 | 0.023 | 4.2 | 1.98 | 3.0 | 0.00 |
| Hungary | 0.0283 | 0.036 | 0.0105 | 0.008 | 5.7 | 0.47 | 5.2 | 0.64 |
| Iceland | 0.0283 | 0.049 | 0.0282 | 0.011 | 1.0 | 0.00 | 1.0 | 0.00 |
| India | 0.0136 | 0.038 | 0.0132 | 0.004 | 2.0 | 0.00 | 3.1 | 0.83 |
| Indonesia | 0.0479 | 0.059 | 0.0785 | 0.033 | 5.0 | 0.00 | 5.3 | 0.47 |
| Iran | 0.0169 | 0.150 | 0.0478 | 0.038 | 5.4 | 0.49 | 5.8 | 0.39 |
| Iraq | 0.0092 | 0.242 | 0.0806 | 0.073 | 6.8 | 0.39 | 6.9 | 0.24 |
| Ireland | 0.0017 | 0.027 | 0.0244 | 0.015 | 1.0 | 0.00 | 1.2 | 0.44 |
| Israel | 0.0098 | 0.024 | 0.0192 | 0.019 | 2.0 | 0.00 | 2.4 | 0.49 |
| Italy | 0.0279 | 0.028 | 0.0268 | 0.007 | 1.2 | 0.44 | 1.5 | 0.51 |
| Ivory Coast | -0.0155 | 0.057 | 0.0105 | 0.046 | 5.9 | 0.33 | 5.2 | 0.44 |
| Jamaica | -0.0201 | 0.045 | -0.0193 | 0.015 | 1.7 | 0.47 | 2.6 | 0.49 |
| Japan | 0.0248 | 0.029 | 0.0505 | 0.023 | 1.5 | 0.51 | 1.0 | 0.00 |
| Jordan | 0.0294 | 0.090 | 0.0832 | 0.058 | 5.7 | 0.47 | 5.6 | 0.49 |
| Kenya | -0.0056 | 0.039 | -0.0112 | 0.013 | 5.4 | 0.49 | 4.8 | 0.66 |
| Kuwait | -0.0694 | 0.140 | 0.0444 | 0.049 | 4.9 | 1.03 | 4.0 | 0.71 |
| Lesotho | 0.0615 | 0.092 | 0.1147 | 0.050 | 5.2 | 0.53 | 4.6 | 0.79 |
| Liberia | -0.0282 | 0.064 | -0.0413 | 0.019 | 5.6 | 0.49 | 4.8 | 0.81 |
| Luxembourg | 0.0129 | 0.045 | 0.0122 | 0.007 | 1.3 | 0.47 | 1.0 | 0.00 |
| Madagascar | -0.0343 | 0.041 | -0.0288 | 0.015 | 5.2 | 0.44 | 5.2 | 0.88 |
| Malawi | -0.0059 | 0.038 | -0.0163 | 0.038 | 6.4 | 0.49 | 6.6 | 0.51 |
| Malaysia | 0.0335 | 0.079 | 0.0606 | 0.028 | 2.9 | 0.43 | 4.2 | 0.73 |
| Mali | 0.0086 | 0.037 | 0.0079 | 0.011 | 6.9 | 0.24 | 6.2 | 0.44 |
| Malta | 0.0528 | 0.036 | 0.0379 | 0.025 | 1.6 | 0.51 | 2.5 | 1.12 |
| Mauritania | 0.0025 | 0.097 | 0.0481 | 0.066 | 6.4 | 0.61 | 6.0 | 0.00 |
| Mauritius | 0.0475 | 0.084 | 0.0236 | 0.027 | 2.2 | 0.39 | 2.4 | 0.80 |
| Mexico | 0.0067 | 0.054 | 0.0201 | 0.024 | 3.7 | 0.59 | 3.7 | 0.47 |
| Morocco | 0.0246 | 0.040 | 0.0399 | 0.027 | 4.2 | 0.64 | 4.6 | 0.61 |
| Mozambique | -0.0516 | 0.085 | -0.0273 | 0.021 | 6.5 | 0.52 | 6.8 | 0.45 |
| Nepal | 0.0176 | 0.039 | 0.0484 | 0.020 | 4.4 | 1.50 | 4.4 | 0.51 |
| Netherlands | 0.0101 | 0.019 | 0.0119 | 0.010 | 1.0 | 0.00 | 1.0 | 0.00 |
| New Zealand | 0.0001 | 0.040 | -0.0185 | 0.013 | 1.0 | 0.00 | 1.0 | 0.00 |
| Nicaragua | -0.0460 | 0.181 | -0.0021 | 0.037 | 5.1 | 0.43 | 4.6 | 0.61 |
| Niger | -0.0029 | 0.079 | -0.0053 | 0.029 | 6.8 | 0.39 | 6.0 | 0.00 |
| Nigeria | -0.0164 | 0.079 | 0.0302 | 0.071 | 5.1 | 1.90 | 4.1 | 0.86 |
| North Yemen | 0.0470 | 0.056 | 0.0854 | 0.077 | 5.4 | 0.62 | 4.8 | 0.44 |
| Norway | 0.0238 | 0.034 | 0.0276 | 0.009 | 1.0 | 0.00 | 1.0 | 0.00 |
| Pakistan | 0.0244 | 0.031 | -0.0143 | 0.009 | 4.9 | 1.58 | 4.9 | 0.60 |
| Panama | 0.0107 | 0.040 | 0.0212 | 0.026 | 5.7 | 1.10 | 4.6 | 1.17 |

Table 1. Continued

| | GDP Growth Mean | GDP Growth Std Dev | KL Growth Mean | KL Growth Std Dev | Pol Rights Mean | Pol Rights Std Dev | Civil Lib Mean | Civl Lib Std Dev |
|---|---|---|---|---|---|---|---|---|
| Paraguay | 0.0250 | 0.089 | 0.0597 | 0.035 | 5.0 | 0.35 | 5.4 | 0.49 |
| Peru | -0.0083 | 0.068 | 0.0121 | 0.024 | 3.9 | 2.12 | 3.7 | 0.92 |
| Philippines | 0.0117 | 0.051 | 0.0216 | 0.029 | 4.4 | 1.00 | 4.3 | 1.21 |
| Poland | -0.0073 | 0.076 | -0.0152 | 0.005 | 5.8 | 0.39 | 5.2 | 0.64 |
| Portugal | 0.0191 | 0.055 | 0.0395 | 0.027 | 2.3 | 1.61 | 2.6 | 1.33 |
| Rwanda | 0.0099 | 0.048 | 0.0447 | 0.018 | 6.4 | 0.49 | 5.7 | 0.47 |
| Saudi Arabia | 0.0087 | 0.151 | 0.1818 | 0.094 | 6.0 | 0.00 | 6.4 | 0.51 |
| Senegal | 0.0014 | 0.041 | -0.0131 | 0.007 | 4.3 | 1.26 | 4.1 | 0.86 |
| Sierra Loene | -0.0296 | 0.062 | -0.0103 | 0.012 | 5.2 | 0.64 | 5.0 | 0.00 |
| Singapore | 0.0490 | 0.040 | 0.0955 | 0.021 | 4.5 | 0.51 | 5.0 | 0.00 |
| Somalia | 0.0042 | 0.162 | 0.0481 | 0.040 | 7.0 | 0.00 | 6.8 | 0.44 |
| South Africa | 0.0018 | 0.070 | 0.0073 | 0.018 | 4.8 | 0.40 | 5.8 | 0.45 |
| South Korea | 0.0583 | 0.055 | 0.0764 | 0.026 | 4.5 | 0.80 | 5.2 | 0.83 |
| Spain | 0.0109 | 0.029 | 0.0255 | 0.019 | 2.5 | 1.74 | 3.1 | 1.48 |
| Sri Lanka | 0.0264 | 0.051 | 0.0337 | 0.014 | 2.4 | 0.51 | 3.4 | 0.62 |
| Sudan | 0.0074 | 0.075 | -0.0012 | 0.029 | 5.4 | 0.79 | 5.5 | 0.51 |
| Suriname | 0.0040 | 0.097 | 0.0167 | 0.037 | 4.2 | 2.26 | 3.8 | 1.88 |
| Swaziland | -0.0135 | 0.103 | 0.0322 | 0.038 | 5.3 | 0.59 | 4.9 | 1.11 |
| Sweden | 0.0148 | 0.024 | 0.0169 | 0.010 | 1.1 | 0.24 | 1.0 | 0.00 |
| Switzerland | 0.0150 | 0.035 | 0.0264 | 0.010 | 1.0 | 0.00 | 1.0 | 0.00 |
| Syria | 0.0291 | 0.119 | 0.0477 | 0.037 | 5.8 | 0.64 | 6.6 | 0.49 |
| Taiwan | 0.0550 | 0.038 | 0.0798 | 0.034 | 2.2 | 0.44 | 4.8 | 0.66 |
| Tanzania | 0.0030 | 0.053 | 0.0019 | 0.018 | 6.0 | 0.00 | 6.0 | 0.00 |
| Thailand | 0.0362 | 0.040 | 0.0414 | 0.013 | 4.1 | 1.56 | 3.8 | 0.88 |
| Togo | -0.0053 | 0.080 | 0.0280 | 0.048 | 6.6 | 0.49 | 5.9 | 0.33 |
| Trin. & Tob. | -0.0121 | 0.149 | 0.0209 | 0.040 | 1.6 | 0.51 | 1.9 | 0.43 |
| Tunisia | 0.0203 | 0.037 | 0.0151 | 0.017 | 5.6 | 0.49 | 5.0 | 0.35 |
| Turkey | 0.0198 | 0.043 | 0.0405 | 0.023 | 2.8 | 1.03 | 4.0 | 0.87 |
| Uganda | 0.0493 | 0.189 | -0.0175 | 0.026 | 5.8 | 1.15 | 5.6 | 1.27 |
| United Kingdom | 0.0200 | 0.029 | 0.0258 | 0.010 | 1.0 | 0.00 | 1.0 | 0.00 |
| United States | 0.0158 | 0.032 | 0.0171 | 0.009 | 1.0 | 0.00 | 1.0 | 0.00 |
| United. Arab E. | -0.0252 | 0.109 | -0.0185 | 0.096 | 5.3 | 0.59 | 5.0 | 0.00 |
| Uruguay | 0.0060 | 0.065 | 0.0115 | 0.025 | 4.2 | 1.64 | 4.2 | 1.59 |
| Venezuela | 0.0092 | 0.097 | 0.0271 | 0.043 | 1.2 | 0.44 | 2.0 | 0.00 |
| West Germany | 0.0185 | 0.027 | 0.0233 | 0.007 | 1.0 | 0.00 | 1.6 | 0.49 |
| Yugoslavia | 0.0243 | 0.046 | 0.0274 | 0.009 | 5.9 | 0.24 | 5.3 | 0.47 |
| Zaire | -0.0443 | 0.060 | 0.0258 | 0.028 | 6.6 | 0.51 | 6.4 | 0.49 |
| Zambia | -0.0514 | 0.079 | -0.0501 | 0.027 | 5.1 | 0.24 | 5.0 | 0.35 |
| Zimbabwe | -0.0007 | 0.078 | -0.0158 | 0.020 | 4.8 | 1.13 | 5.2 | 0.53 |
| Sample Averages | 0.0102 | 0.068 | 0.0223 | 0.027 | 4.2 | 0.64 | 4.1 | 0.56 |

Table 2. Illustration of political and civil rights reform, qualitative timing variable construction for Bangladesh

| Year | Political Rights | RPD1 | RPD2 | RPD3 | RPD4 | RPD5 | Civil Rights | RCD1 | RCD2 | RCD3 | RCD4 | RCD5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1972 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 1973 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| 1974 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| 1975 | 5 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| 1976 | 4 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| 1977 | 4 | 0 | 1 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 |
| 1978 | 4 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 |
| 1979 | 3 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 1 | 0 | 0 |
| 1980 | 3 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 1 | 0 |
| 1981 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| 1982 | 5 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| 1983 | 5 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| 1984 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 0 |
| 1985 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 |
| 1986 | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 |
| 1987 | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 |
| 1988 | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 |

Table 3. Time series models of per capita GDP growth rates

| Model | AIC | Chi-Sq Lags 1-6 | Chi-Sq Lags 7-12 | AR(1) | AR(2) | MA(1) | MA(2) |
|---|---|---|---|---|---|---|---|
| Raw Data | | 0.000 | 0.000 | | | | |
| AR(1) | -4004.78 | 0.016 | 0.046 | 0.188<br>(7.83) | | | |
| AR(1),MA(1) | -4010.14 | 0.401 | 0.392 | 0.542<br>(5.50) | | 0.371<br>(3.41) | |
| AR(2) | -4008.68 | 0.203 | 0.266 | 0.174<br>(7.22) | 0.065<br>(2.61) | | |
| AR(2),MA(1) | -4008.17 | 0.268 | 0.308 | 0.602<br>(2.07) | -0.015<br>(-.22) | 0.430<br>(1.49) | |
| AR(2),MA(2) | -4006.25 | 0.119 | 0.238 | 1.349<br>(.96) | -0.450<br>(-.62) | 1.179<br>(.84) | -0.315<br>(-.65) |

Notes: Numbers under the Chi-square column report probability values for the null hypothesis of white noise.

Numbers in the AR and MA rows report coefficient estimates. Numbers in parentheses in the AR and MA rows are t-statistics for the associated parameter estimates.

Table 4. Pooled growth regression results

| Dependent Variable | Permanent GDP Growth Rate | | Transitory GDP Growth Rate | | Transitory GDP Growth |
|---|---|---|---|---|---|
| Independent Variable | Estimate | P-Value | Estimate | P-Value | Estimate |
| INTERCEPT | -0.00736 | 0.000 | -0.01389 | 0.177 | -0.01256 |
| Economic Variables | | | | | |
| CKL | 0.15883 | 0.000 | 0.44686 | 0.000 | 0.44258 |
| RGDPTT | 0.00063 | 0.573 | -0.00000 | 0.758 | 0.00000 |
| POPCHG | 0.03081 | 0.299 | -0.19377 | 0.244 | -0.24483 |
| Geographic Regions | | | | | |
| AMER | 0.00317 | 0.041 | 0.00883 | 0.310 | 0.01195 |
| ASIA | 0.00592 | 0.000 | 0.02132 | 0.016 | 0.02296 |
| AFRI | 0.00408 | 0.006 | 0.01441 | 0.081 | 0.01550 |
| EURO | 0.00463 | 0.010 | 0.01273 | 0.207 | 0.01649 |
| Institutional Freedom Levels | | | | | |
| P1OR2 | -0.00114 | 0.424 | -0.00417 | 0.604 | |
| P3TO5 | -0.00197 | 0.049 | -0.00068 | 0.914 | |
| C1OR2 | 0.00381 | 0.036 | 0.01453 | 0.154 | |
| C3TO5 | 0.00249 | 0.015 | 0.00506 | 0.376 | |
| Institutional Freedom Reforms | | | | | |
| RPD1 | 0.00019 | 0.901 | -0.00377 | 0.651 | -0.00371 |
| RPD2 | 0.00081 | 0.580 | -0.00894 | 0.279 | -0.00970 |
| RPD3 | -0.00079 | 0.625 | -0.01831 | 0.042 | -0.01851 |
| RPD4 | -0.00141 | 0.398 | 0.01202 | 0.199 | 0.01181 |
| RPD5 | 0.00246 | 0.154 | -0.01800 | 0.063 | -0.01799 |
| RCD1 | 0.00074 | 0.604 | 0.00913 | 0.256 | 0.01212 |
| RCD2 | 0.00293 | 0.050 | -0.00549 | 0.512 | -0.00001 |
| RCD3 | 0.00202 | 0.202 | 0.00719 | 0.419 | 0.00838 |
| RCD4 | 0.00328 | 0.068 | 0.01540 | 0.126 | 0.01744 |
| RCD5 | 0.00563 | 0.003 | -0.01144 | 0.284 | -0.01030 |
| Regression Statistics | | | | | |
| r-squared | 0.0238 | | 0.087 | | 0.086 |
| n | 1775 | | 1775 | | 1775 |

Table 5. Relationship between civil liberties and political rights reforms

| | Years following reform in political rights | | | | | | |
|---|---|---|---|---|---|---|---|
| Years following reform in Civil Liberties | 0 | 1 | 2 | 3 | 4 | 5 | Row Total |
| 0 | 1440 | 64 | 63 | 51 | 52 | 49 | 1719 |
| 1 | 73 | 31 | 6 | 2 | 3 | 6 | 121 |
| 2 | 60 | 7 | 15 | 5 | 1 | 3 | 91 |
| 3 | 49 | 8 | 6 | 12 | 4 | 1 | 80 |
| 4 | 34 | 4 | 4 | 5 | 10 | 3 | 60 |
| 5 | 32 | 4 | 3 | 3 | 4 | 8 | 54 |
| Column Total | 1688 | 118 | 97 | 78 | 74 | 70 | 2125 |

Table 6. Pooled regional growth regressions with dependent variable as permanent component of per capita GDP growth

| | America | | Asia | | Africa | | Europe | | OPEC | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | P-Value | Estimate | P-Value | Estimate | P-Value | Estimate | P-Value | Estimate | P-Value |
| INTERCEP | -0.00729 | 0.027 | 0.00394 | 0.268 | 0.00474 | 0.143 | -0.00559 | 0.001 | -0.00921 | 0.194 |
| CKL | 0.25961 | 0.000 | 0.15134 | 0.000 | 0.14759 | 0.000 | 0.26255 | 0.000 | 0.13265 | 0.001 |
| RGDPTT | 0.00454 | 0.075 | 0.00292 | 0.308 | 0.00985 | 0.148 | 0.00545 | 0.000 | -0.00777 | 0.133 |
| POPCHG | 0.05117 | 0.542 | -0.16185 | 0.242 | -0.27544 | 0.008 | 0.42042 | 0.000 | 0.04945 | 0.786 |
| P1OR2 | -0.00150 | 0.557 | -0.00428 | 0.097 | -0.00265 | 0.482 | -0.00292 | 0.242 | 0.00218 | 0.924 |
| P3TO5 | -0.00501 | 0.031 | -0.00619 | 0.002 | -0.00234 | 0.249 | 0.01084 | 0.000 | 0.00323 | 0.599 |
| C1OR2 | 0.00326 | 0.389 | 0.00101 | 0.785 | -0.00674 | 0.238 | 0.00085 | 0.696 | 0.01479 | 0.530 |
| C3TO5 | 0.00463 | 0.128 | 0.00498 | 0.017 | 0.00286 | 0.133 | | | 0.00622 | 0.258 |
| RPD1 | -0.00283 | 0.438 | 0.00101 | 0.700 | -0.00252 | 0.344 | -0.00007 | 0.975 | 0.00806 | 0.389 |
| RPD2 | -0.00357 | 0.260 | 0.00177 | 0.502 | -0.00080 | 0.785 | -0.00108 | 0.603 | -0.00118 | 0.895 |
| RPD3 | -0.00216 | 0.571 | 0.00111 | 0.678 | -0.00064 | 0.843 | 0.00024 | 0.918 | -0.01683 | 0.075 |
| RPD4 | -0.00639 | 0.074 | -0.00036 | 0.893 | 0.00278 | 0.408 | -0.00249 | 0.259 | -0.00727 | 0.478 |
| RPD5 | -0.00120 | 0.729 | 0.00104 | 0.659 | 0.00589 | 0.068 | -0.00197 | 0.372 | 0.00205 | 0.833 |
| RCD1 | 0.00347 | 0.313 | -0.00116 | 0.622 | 0.00205 | 0.506 | 0.00084 | 0.737 | -0.00212 | 0.842 |
| RCD2 | 0.00299 | 0.476 | 0.00272 | 0.255 | 0.00159 | 0.657 | 0.00043 | 0.824 | 0.00554 | 0.594 |
| RCD3 | 0.00799 | 0.074 | 0.00224 | 0.361 | 0.00315 | 0.344 | 0.00239 | 0.365 | 0.00256 | 0.825 |
| RCD4 | 0.00647 | 0.147 | 0.00152 | 0.550 | 0.00172 | 0.632 | -0.00196 | 0.370 | 0.01637 | 0.089 |
| RCD5 | 0.00306 | 0.479 | 0.00168 | 0.487 | 0.01023 | 0.007 | 0.00162 | 0.432 | 0.01038 | 0.282 |
| r-squared | | 0.334 | | 0.401 | | 0.235 | | 0.355 | | 0.222 |
| # of countries | | 29 | | 18 | | 44 | | 23 | | 11 |

Table 7. Pooled regional growth regressions dependent variable as transitory component of per capita GDP growth

| | America | | Asia | | Africa | | Europe | | OPEC | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Estimate | P-Value | Estimate | P-Value | Estimate | P-Value | Estimate | P-Value | Estimate | P-Value |
| INTERCEP | -0.01866 | 0.304 | 0.05817 | 0.003 | 0.03244 | 0.080 | -0.00559 | 0.001 | -0.03069 | 0.376 |
| CKL | 0.79545 | 0.000 | 0.30735 | 0.005 | 0.36191 | 0.000 | 0.26255 | 0.000 | 0.50291 | 0.006 |
| RGDPTT | 0.00000 | 0.883 | -0.00000 | 0.319 | 0.00000 | 0.994 | 0.00000 | 0.000 | -0.00000 | 0.464 |
| POPCHG | -0.12922 | 0.781 | -2.22802 | 0.003 | -1.37301 | 0.020 | 0.42042 | 0.000 | -0.16099 | 0.857 |
| P1OR2 | 0.01121 | 0.426 | -0.03394 | 0.016 | -0.01217 | 0.572 | -0.00292 | 0.242 | 0.01730 | 0.877 |
| P3TO5 | -0.00208 | 0.871 | -0.02631 | 0.012 | -0.00684 | 0.556 | 0.04084 | 0.000 | 0.07760 | 0.011 |
| C1OR2 | 0.00456 | 0.828 | 0.03022 | 0.135 | -0.00496 | 0.879 | 0.00085 | 0.696 | 0.04278 | 0.711 |
| C3TO5 | 0.00546 | 0.745 | 0.03376 | 0.003 | 0.01367 | 0.208 | | | -0.00548 | 0.838 |
| RPD1 | -0.02896 | 0.153 | -0.00708 | 0.618 | -0.01377 | 0.366 | -0.00007 | 0.975 | -0.05185 | 0.258 |
| RPD2 | -0.01060 | 0.546 | -0.00205 | 0.886 | -0.00431 | 0.798 | -0.00108 | 0.603 | -0.13493 | 0.003 |
| RPD3 | -0.03823 | 0.071 | -0.01117 | 0.440 | 0.01125 | 0.540 | 0.00024 | 0.918 | -0.06750 | 0.144 |
| RPD4 | -0.01812 | 0.359 | 0.00372 | 0.797 | 0.03230 | 0.093 | -0.00249 | 0.259 | -0.02055 | 0.682 |
| RPD5 | -0.03142 | 0.100 | 0.00890 | 0.488 | -0.01886 | 0.306 | -0.00197 | 0.372 | -0.06400 | 0.182 |
| RCD1 | 0.02310 | 0.225 | 0.00702 | 0.583 | 0.00426 | 0.810 | 0.00084 | 0.737 | -0.03925 | 0.453 |
| RCD2 | 0.01923 | 0.407 | -0.00249 | 0.848 | 0.00543 | 0.790 | 0.00043 | 0.824 | -0.03940 | 0.440 |
| RCD3 | 0.01827 | 0.460 | -0.00145 | 0.913 | -0.00791 | 0.677 | 0.00239 | 0.365 | 0.08058 | 0.157 |
| RCD4 | 0.01846 | 0.454 | -0.00201 | 0.884 | 0.03748 | 0.069 | -0.00196 | 0.370 | 0.00964 | 0.837 |
| RCD5 | 0.02247 | 0.347 | -0.00952 | 0.469 | -0.03257 | 0.132 | 0.00162 | 0.432 | -0.04439 | 0.347 |
| r-squared | | 0.142 | | 0.192 | | 0.082 | | 0.123 | | 0.212 |
| # of countries | | 29 | | 18 | | 44 | | 23 | | 11 |

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